

Future Activities

During the Madison workshop, an effort was made to record the R&D activities that the participants felt were important for future consideration, and to attempt to prioritize some of these areas. The numbers in brackets represent the votes that specific activities received during the prioritization process. This effort was not completed and should be viewed as a "work in progress;" the intent of this document is merely to document the ideas identified at the workshop. (Hank Price, 303-384-7437, henry_price@nrel.gov).

Concentrator Activities

- **EuroTrough loop test at SEGS [2]**
- **Reflective surface development [2]**
- **Optimization of concentrator structures and concentrator design development [2]**
- **Cleaning techniques and Anti-soiling coating [2]**
- **Low-cost mirror panels [1]**
- **Soiling experiments at sites [1]**
- **General testing of new designs**

Receiver

- **Reliable/Low-cost Receivers [3]**
 - **KJCOC Re-evacuated HCE**
- **Durability Issues [e.g. glass to metal seal] [3]**
- **Establish Standards for Receivers [e.g. dimensions, operating conditions][2]**
- **Secondary Reflector [2]**
- **Selective coating improvements [1]**
 - **ELI Coating**
 - **Black Crystal selective coating**
 - **Other Coatings**
- **Improved Designs [research into improving heat conservation]**

Thermal Storage

- **Advanced HTF Thermal Storage Systems [4]**
 - **Hydrocarbons**
 - **Inorganic Salts**
 - **Organic Salts**
- **Detailed system design of near-term TS system [3]**
- **Additional testing of TS system at lab scale [thermocline, HX] [3]**
- **Prototype test at SEGS of Near-term storage [3]**
- **Caloria Safety [2]**
- **Storage Solutions for DSG/ISCCS [1]**
- **Improved analysis of storage technologies [\$ kWh basis] [1]**
- **Development of other TS technologies [phase change, chemical]**

Modular Trough Systems

- Development of working fluids at higher temperatures
 - Database of working fluid history
- Power cycle design optimization
 - flexibility to maintain efficiency
- Develop Technology-Roadmap for modular trough systems
- Thermal Storage Development

SunLab Support

- Develop methodology/tools for standardized economic and financial calculations
 - LEC, IRR
- Component failure modes analysis database for existing plants
- Assist industry in basic science questions
- Instruments for field measurement and alignment of collectors
- Facilitate strategies to drive technology into market
- Develop improved performance models
- Systems integration and project outreach
- Measurement of flux and temperature distribution on absorber tubes
- Establish standards for solar equipment

Opportunities for University Support

- Power cycle analysis of ORC/alternative cycles
- Basic research on coatings, reflective surfaces, HTF, fluids
- Wind tunnel testing on trough
- Instrumentation issues & flux measurement
- Graduate student internships to labs/industry
- Modeling and Analysis [TRNSYS/HCE]
- Collector control and solar field flow control
- Financial modeling